Space Weather Forecast

Issued on Monday, 03 June 2024 at 12:16 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Moderate solar activity with a slight chance of Strong flares. Glancing Coronal Mass Ejection (CME) impacts possible into the period with a chance of Minor or Moderate Geomagnetic Storms.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Moderate during the last 24 hours, with two Moderate flare from the larger region in the southern disk. There are now ten numbered spots on the disc. The previously mentioned region in the southern disk remains the most notable spot, by far the largest region and also the most magnetically complex. Areal extent has reduced somewhat however, with continued signs of fragmentation. A newly numbered region in the southeast has shown the most development in recent hours will be monitored. Other regions on the disc either are stable or have shown only slight evolution.

No Earth-directed Coronal Mass Ejections (CMEs) have been observed in available imagery.

Solar Wind / Geomagnetic Activity: Solar winds persisting at background levels, varying between 300-350 km/s. The Interplanetary Magnetic Field strength was generally weak with the important north-south component also varying weakly. Geomagnetic activity was Quiet (Kp 0-2).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background levels with no solar radiation storms occurring.

Four-Day Space Weather Forecast Summary

Solar Activity: High to Moderate activity is forecast with further Moderate class flare likely and a slight chance of isolated Strong class flares, these mainly from the complex sunspot in the southern disk.

Solar Wind / Geomagnetic Activity: A weak CME from a flare on 31 May is expected either early today (3rd Jun) remains possible day 1 (03 Jun), although confidence is low with the strength of any arrival due to the faint and apparent weak nature of the CME. Analysis of a CME associated with a flare on the 1st June from the complex sunspot region in the southern disk, suggests the potential for a glancing impact sometime later day 2 (04 Jun), or perhaps more likely early day 3 (05 Jun). Otherwise largely background solar winds are forecast to persist. Geomagnetic activity is forecast to be mainly Quiet (Kp 0-2) initially, with just a chance of Unsettled or Active intervals (Kp 3-4) should we see any glancing CME arrival day 1 (03 Jun). The risk of Unsettled to Active conditions increases into day 2 (04 Jun), with a chance of G1-G2 Minor to Moderate (Kp 5-6) Storm intervals associated with any CME arrival later in the day, this risk persisting into day 3 (05 Jun) before gradually easing.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is likely to persist at background levels, but with a slight chance of rising above the S1

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Minor Storm level in response to any further notable solar flares.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	5	50	50	5
Strong	G3	No	1	5	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	70	70	70	70
Very Active	R3 to R5 X	No	20	20	20	20

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	20	20	20	20
Very Active	≥ S3 *	No	5	5	5	5

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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